

# **Strategies to Reduce CMV-Involved Crashes, Fatalities, and Injuries in Michigan: 2013 Update**

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## Objectives

- Update data analyses from 2007 report to identify current CMV safety status and primary traffic safety issues.
- Assess whether strategies are relevant to current CMV safety challenges. Recommend any new areas for improvement.
- Assess impact of Public Act 231 which exempts medium/intrastate carriers from certain regulations.

# **Implications of Exempting Medium-Duty Trucks Operated by Intrastate Carriers**

## Public Act 231

Medium-duty trucks (GVWR 10,001 to 26,000 lbs.) operated by intrastate carriers:

- Not required to display US DOT number;
- Exempt from hours-of-service (HOS);
- Exempt from compliance with inspection requirements;
- Not required to provide certain documents to enforcement personnel.

# Method

- Decode VIN to distinguish medium/heavy trucks.
- Interstate/intrastate from MCMIS classification.
- Compare truck size/authority groups in:
  - Crash data
  - Inspection data
  - Driver history
- Critical issues:
  - Fatigue/asleep in crashes;
  - HOS & log violations;
  - Vehicle mechanical condition.

## Comparison Groups in Michigan Crash Data 2006-2011

Size/authority	N	Percent
Medium intrastate	4,478	11.6
Medium interstate	3,149	8.1
Heavy intrastate	11,125	28.7
Heavy interstate	19,944	51.5
Total	38,696	100.0

# Crash Comparisons

- Distribution of crash severity similar, except higher % fatal for heavy/interstate .
- Similar distributions of weather, road condition, light condition, except heavy/interstate higher in bad weather & dark.
- 85% of crashes between 6 am & 6 pm for medium/intra-, medium/inter-, & heavy/intrastate.
- Heavy/interstate 75% between 6am & 6pm.
- 57% of crashes of medium/intrastate on local/county roads; similar to medium/interstate (51%) and heavy intrastate (49%). 30% of heavy/interstate crashes on local/county roads.
- Medium/intrastate over-involved in rear-end crashes; under-involved in single-vehicle & same-direction sideswipes.

## Distribution of Driver Condition in Crashes 2006-2011

Driver condition	Medium intrastate	Medium interstate	Heavy intrastate	Heavy interstate
Appeared normal	90.20	87.81	92.91	93.49
Had been drinking	0.29	0.16	0.17	0.28
Illegal drug use	0.07	0.06	0.11	0.10
Sick	0.13	0.13	0.08	0.15
Fatigue	0.02	0.25	0.06	0.29
Asleep	0.04	0.32	0.09	0.21
Medication	0.02	0.00	0.04	0.04
Driver distracted	0.63	0.64	0.31	0.42
Driver using cell phone	0.20	0.10	0.05	0.05
Unknown	2.93	2.99	2.62	2.26



## Driver Record, 5 Years Prior to Crash

Charge type	Medium intrastate	Medium interstate	Heavy intrastate	Heavy interstate
No charges	44.1	44.3	49.6	46.0
Alcohol	6.2	5.8	4.7	3.7
Speed	37.2	37.5	34.9	41.6
Other moving	29.5	32.8	23.0	32.0
Licensing	7.1	8.2	3.4	4.1
Felony/misdemeanor	2.0	1.5	0.7	0.7
Other	10.1	11.1	7.7	10.3

## Driver Record While Driving a CMV 5 Years Prior to Crash

Charge type	Medium intrastate	Medium interstate	Heavy intrastate	Heavy interstate
No charges	83.4	82.5	76.2	62.7
Alcohol	0.0	0.1	0.1	0.2
Speed	7.7	8.9	14.1	23.9
Other moving	7.2	7.1	9.3	17.2
Licensing	1.4	1.5	1.2	1.4
Felony/misdemeanor	0.0	0.0	0.0	0.0
Other	1.6	1.6	0.3	3.9
Any charge in a truck	16.6	17.5	23.8	37.3

# Inspection Violations in Level 1 Inspections 2006-2011

Violation type	Medium intrastate	Medium interstate	Heavy intrastate	Heavy interstate
Lighting	43.5	35.7	50.1	38.3
Brakes	14.8	13.4	56.2	41.8
Other vehicle	57.0	41.9	62.2	37.3
HOS/logs	2.3	6.6	3.4	9.5
Moving violation	8.0	7.5	5.7	5.3
Other driver	45.8	35.0	46.4	35.8
Hazmat	0.9	1.1	1.7	1.5
Any violation	84.4	75.6	91.8	82.9

Carriers classified by type of truck involved in a crash  
in Michigan, 2006-2011.

# Summary

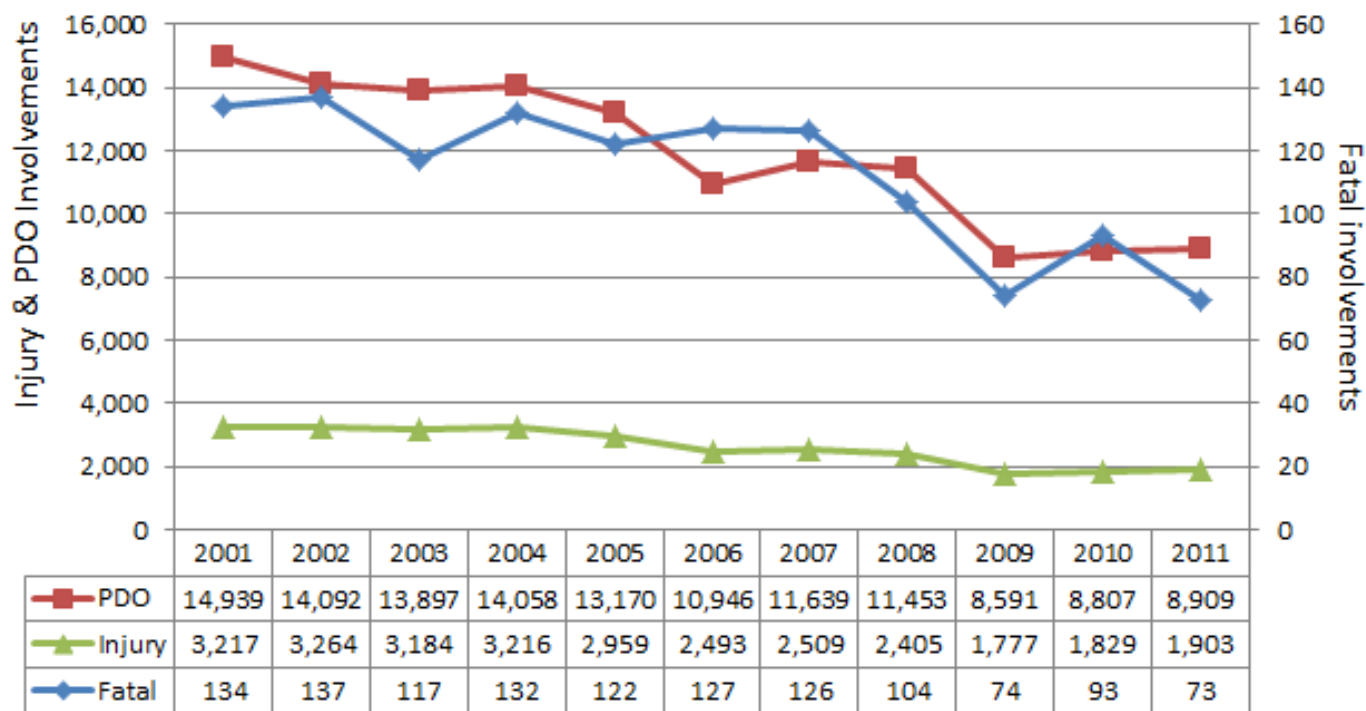
- Medium/intrastate trucks operated in local commerce, primarily during the day.
- Crashes consistent with local operations in traffic.
- Driver record overall comparable to other truck/carrier types, except somewhat more alcohol.
- Driver record in a CMV shows fewer prior charges.
- Fatigue/asleep in crashes coded significantly less than comparison types.
- Inspections show fewer HOS & driver log violations.
- Inspections show comparable to higher rates of vehicle violations, except fewer brake violations (because hydraulic?).

## Conclusion

- Exemption from HOS regulations probably would have little effect overall because typical medium/intrastate operations are not constrained by HOS limits.
- Exemption from vehicle inspection and maintenance may have a safety effect because, except for brakes, violation rates comparable to or slightly higher than comparison truck groups.

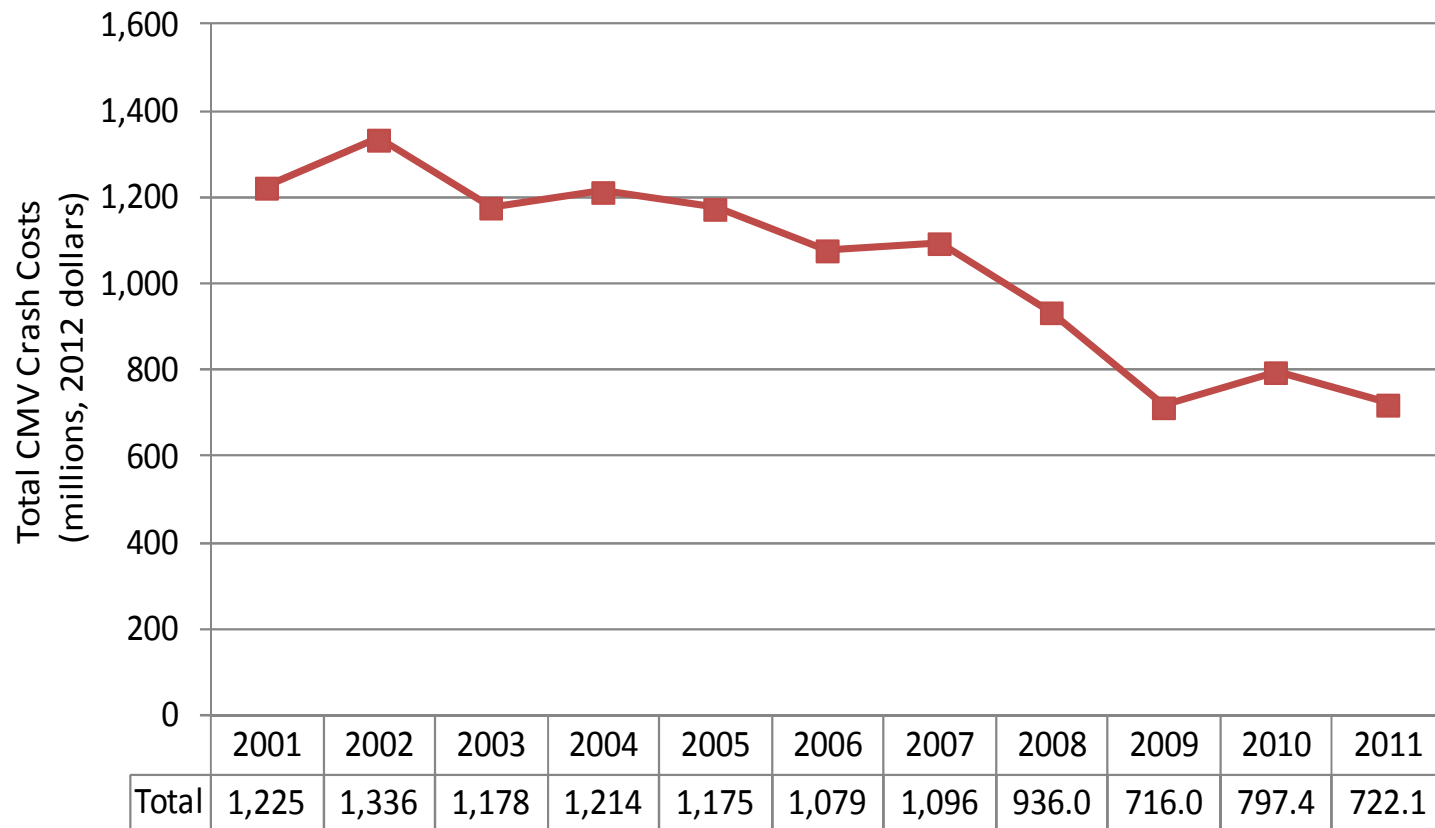
# Updated CMV Safety Status

## CMVs In Crashes by Severity and Year



Crash severity	2001-2005	2006-2011	% change
Fatal	128	100	-29.0
Fatal & A-injury	554	378	-46.6
Fatal, A-, & B-injury	1,359	908	-49.7

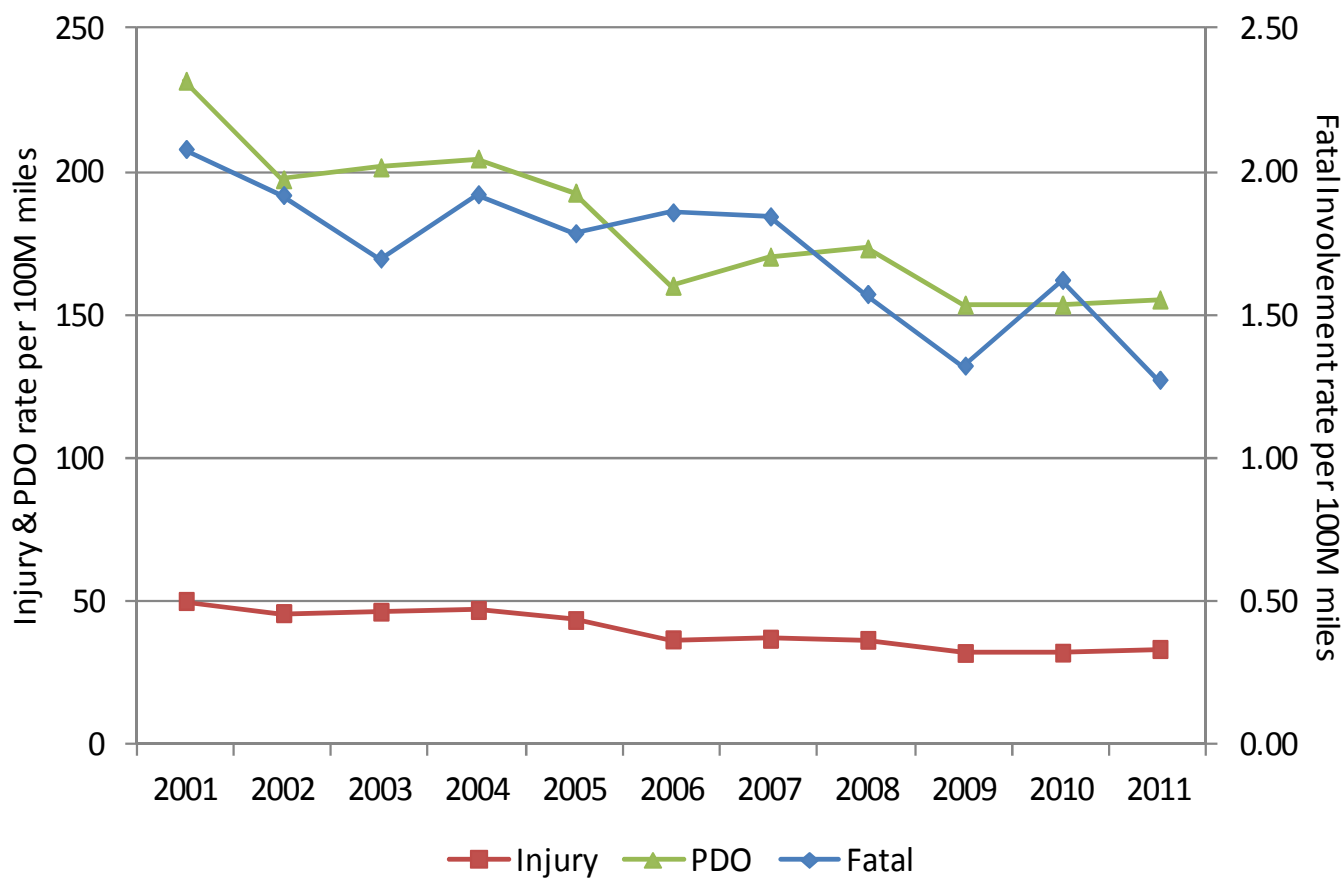
## CMV Crash Costs by Year



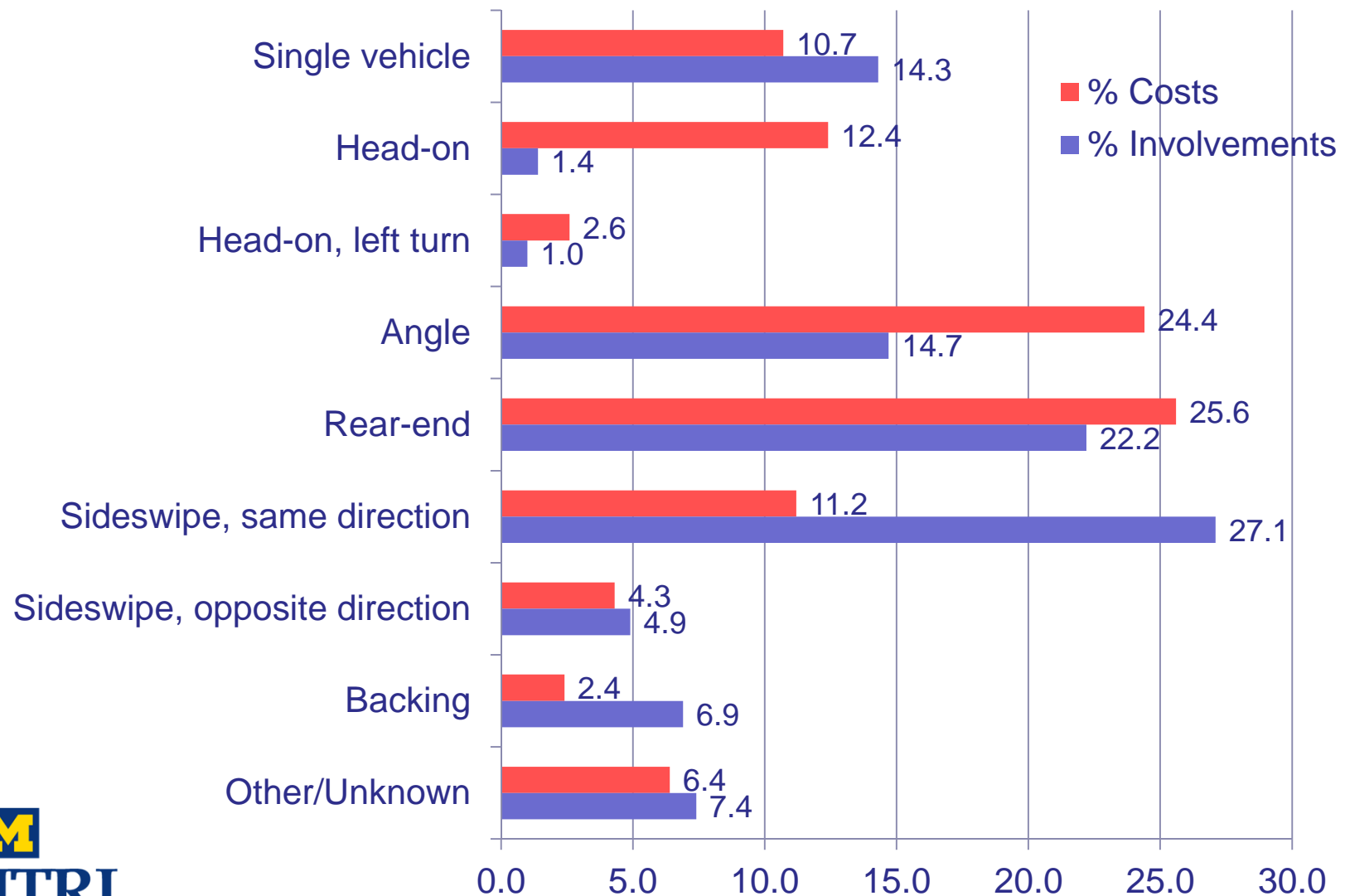
Fatal and A-injury crashes are 3.1% of all CMV involvements and account for 60% of CMV crash costs.



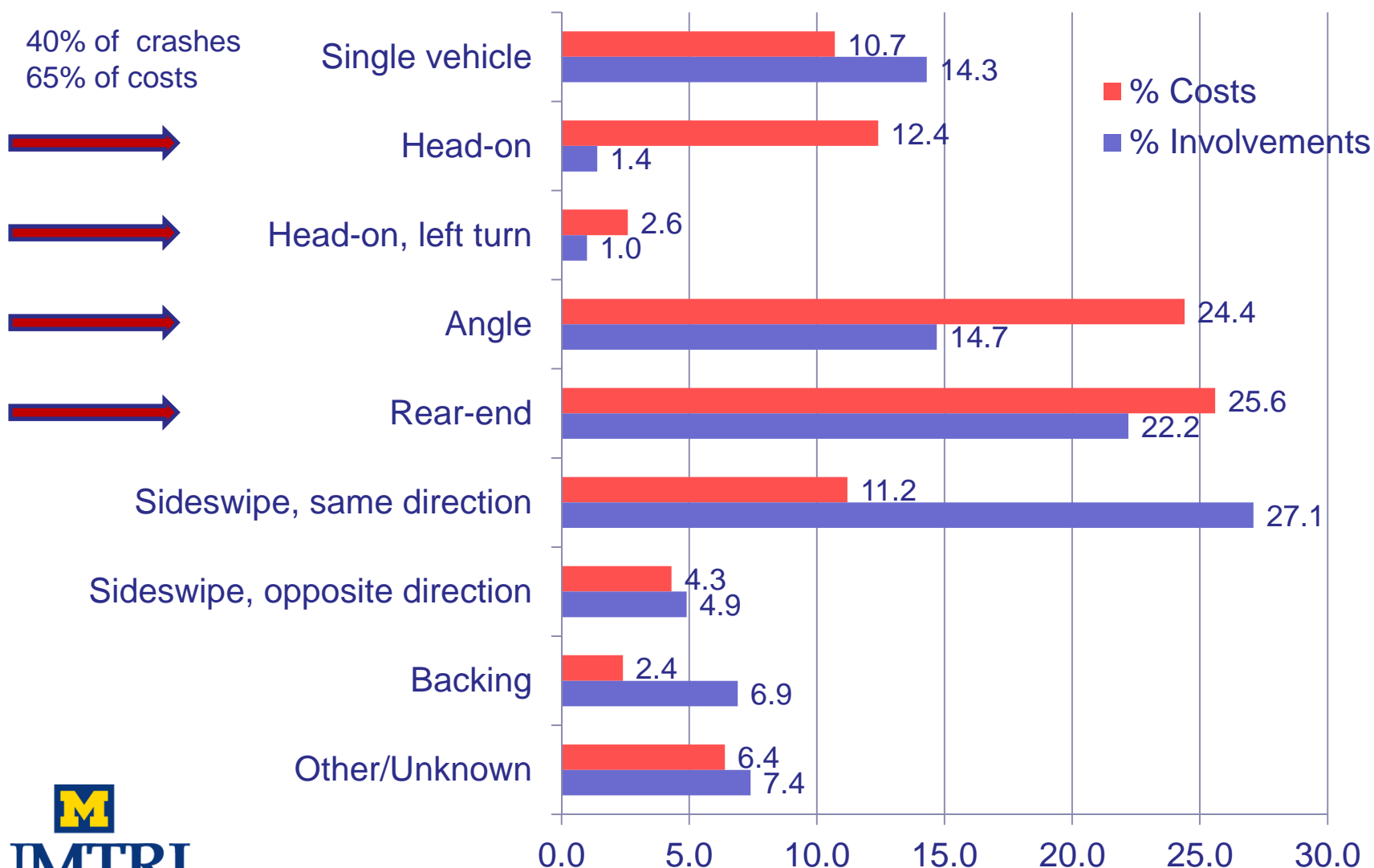
## CMV Crash Rates by Severity and Year



## Crash Types by Prevalence and Share of Crash Costs

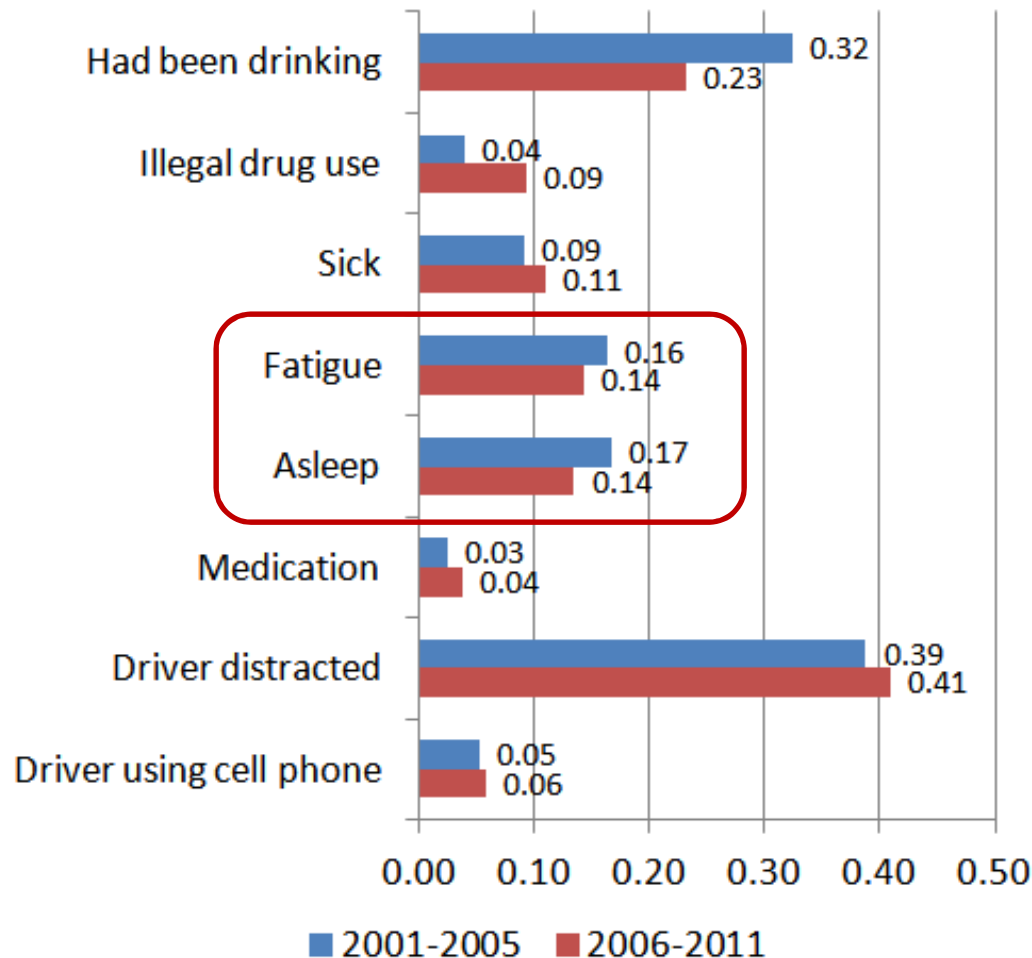


## Crash Types by Prevalence and Share of Crash Costs



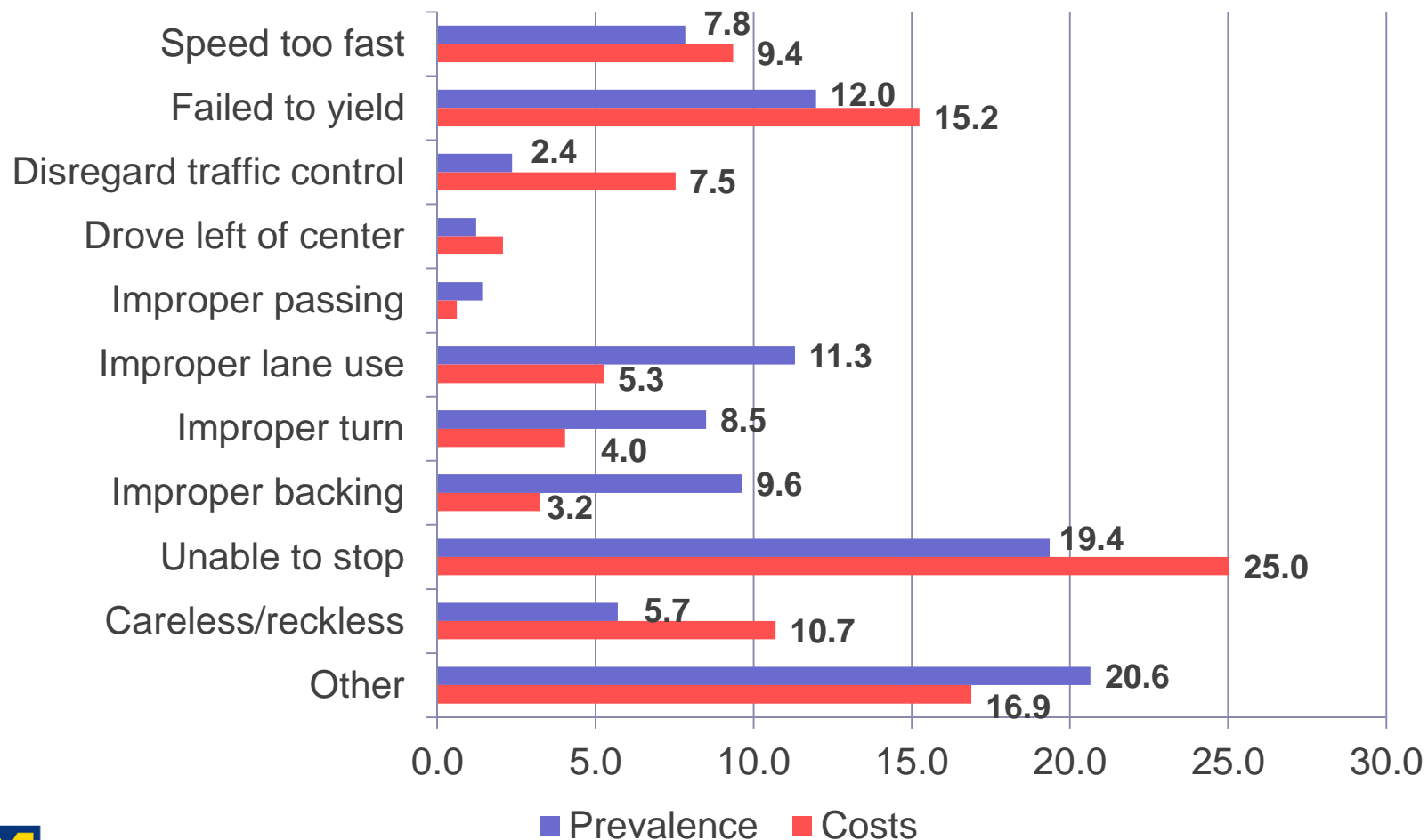
# CMV Driver Condition

## Comparing 2001-2005 with 2006-2011

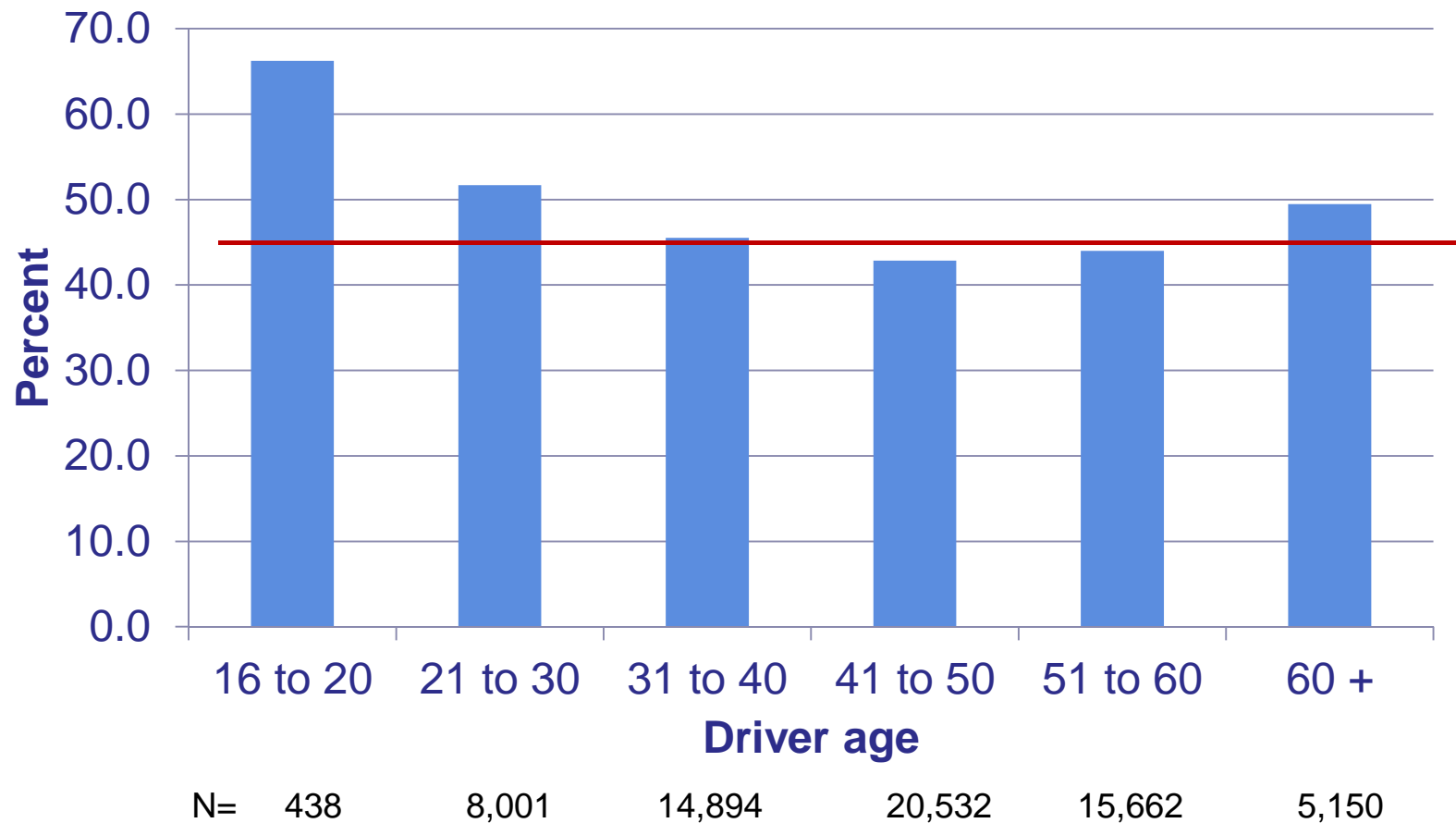


- Proportion of fatigue/asleep low.
- Slight decline between the periods (0.32% to 0.27%).
- Significant decline in alcohol use (already low).
- Drug use doubled (though still low).
- For light vehicles, proportion of fatigue/asleep (0.4%) virtually unchanged.

# CMV Hazardous Actions by Prevalence and Share of Crash Costs



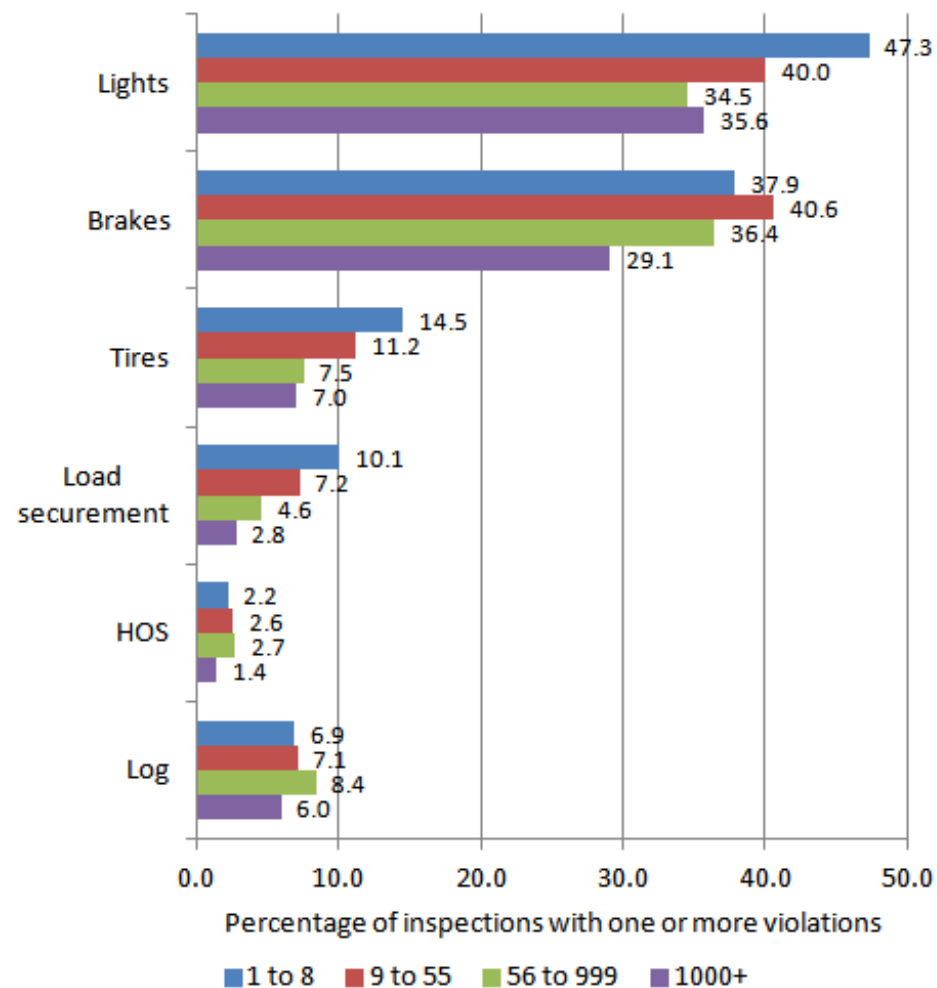
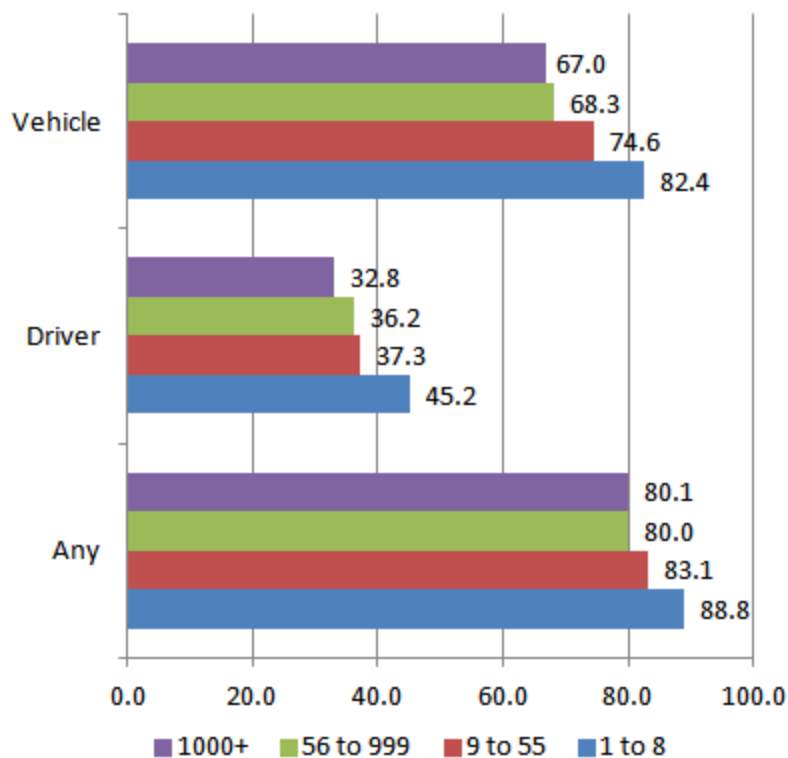
# Younger CMV Drivers Tend to Have Higher Rates of Hazardous Actions



## Typical Hazardous Actions of Younger CMV Drivers

- Speeding (8.9% of hazardous actions)
- Failed to yield (11.2%)
- Improper lane use (9.2%)
- Improper turn (6.9%)
- Improper backing (11.5%)
- Following too close (23.1%)
- Careless/negligent & reckless (5.7%)

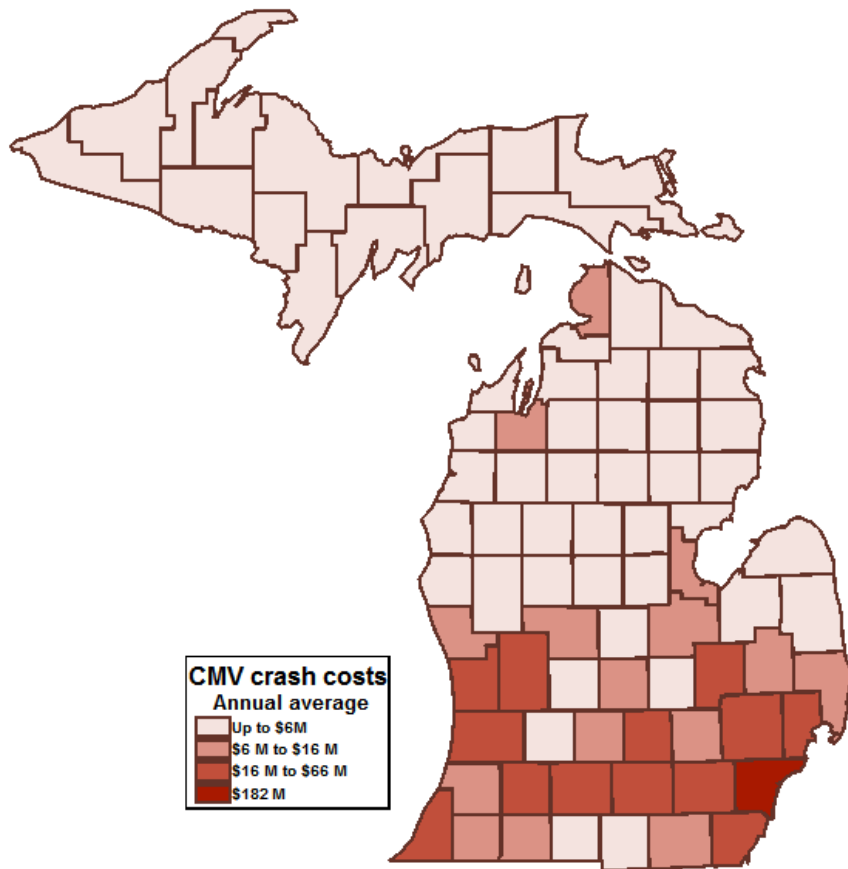
# CMV Inspection Results by Fleet Size



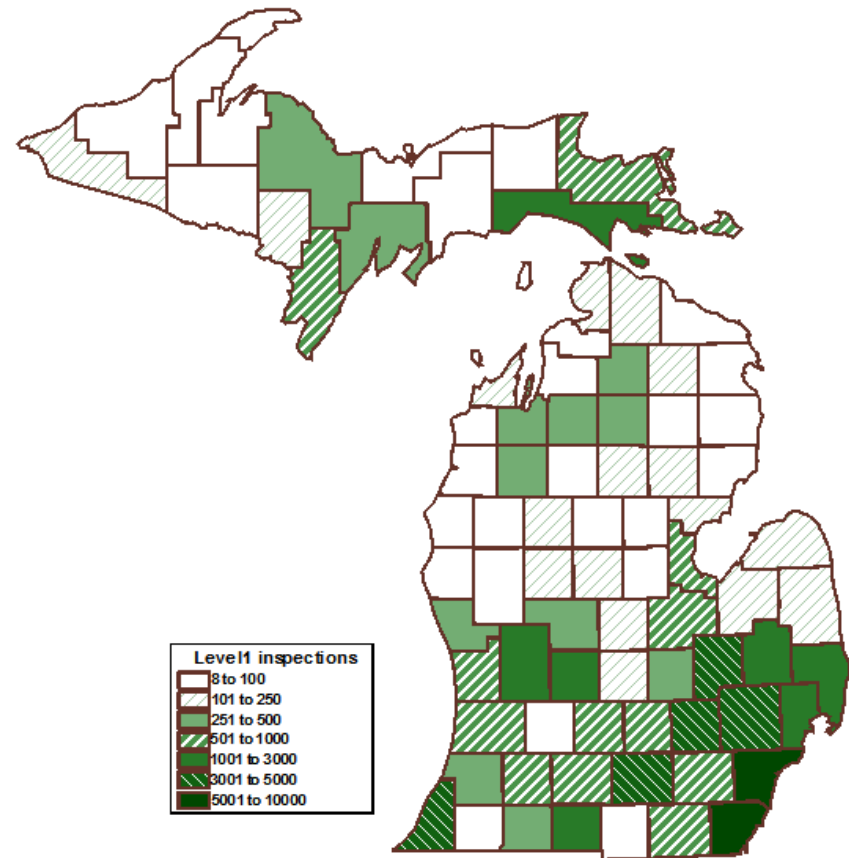


# Crash Costs & Level 1 Inspections by County

CMV Crash Costs



Level 1 Inspections



## Strategies Recommended

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- Targeted enforcement.
- Encourage deployment of truck safety technologies.
- Increase knowledge of sharing road.
- Strengthen CDL program.
- Improve maintenance of CMVs.
- Improve fleet safety management.
- Improve crash data.

# Continuing Relevance of Strategies

- Updated analysis showed that overall CMV safety is increasing.
- However, many of the same issues remain:
  - Vehicle maintenance, including brakes and lights.
  - Fleet size strongly correlated with violation and out-of-service (OOS) rates.
  - Younger CMV drivers have significantly higher rates of hazardous actions.
  - High-crash locations remain stable.

# Strategies Going Forward

- Continue the main strategies:
  - Improve compliance of drivers and vehicles with FMCSRs.
  - Encourage adoption of advanced technologies.
  - Continue to educate on share-the-road and TACT to target light vehicle drivers.
  - Education and outreach to improve driver performance.
  - Improve crash data, particularly to identify vehicle types and facilitate joins to other data to enrich understanding of CMV crashes.